28th ECCMID EUROPEAN CONGRESS OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES
Madrid, Spain
21 – 24 April 2018

P0543 Evaluation of the FilmArray Biofire RP2plus sensitivity for MERS-CoV detection and clinical impact of its use in comparison with non automated screening PCRs.

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Background: Middle East respiratory syndrome coronavirus (MERS-CoV), an endemic virus in Saoudi Arabia, is a major public health concern due to its high mortality. Since 2011, imported cases have been observed in more than 20 countries. In France, a specific surveillance is implemented for suspected cases presenting with respiratory symptoms returning form the Hajj pilgrimage. These cases are admitted to referral hospitals for rapid investigations. Upper and Lower respiratory tract samples are collected and subsequently tested for MERS-CoV and other respiratory viruses. The National Reference Centre is performing this screening with a set of 12 PCRs (in-house and R-Gene MWS Argène bioMérieux). This study evaluated the analytical sensitivity of the multiplex PCR FilmArray® Biofire RP2*plus* kit for MERS-CoV detection on lower and upper respiratory tract specimens, and compared its analytical performances with the current screening procedures.

Materials/methods: The limit of detection of the FilmArray® Biofire RP2*plus* was determined by analyzing 10 fold-diluted MERS-CoV positive controls (QCMD). Replicates of each dilution were tested and 9 lower respiratory samples spiked with MERS-CoV RNA were also tested. Secondly, during the 2017 Hajj reinforced surveillance, 46 samples from 21 suspected cases were tested with FilmArray® Biofire RP2*plus* and the conventional screening procedure. The subsequent delay of response and impact on disease management were analysed.

Results: FilmArray® Biofire RP2*plus* was as sensitive as the routine PCRs for MERS-CoV and all other respiratory viruses detection, providing a complete virus diagnosis in 2-hours as compared to 24-hours with the separated PCRs. For Hajj patient's management, the delay of response was also shorter (2h vs 24h). However, patient's isolation was not significantly reduced due to medical organization.

Conclusions: The FilmArray® Biofire RP2*plus* enabled a reliable diagnosis of MERS-CoV infection and a rapid detection of 22 respiratory viruses and bacteria in a single test. Providing the aetiology of the disease helps to exclude a patient and stop isolation procedures. It is a rapid easy to use and reliable test providing real-time diagnosis for the investigation of MERS-CoV suspected cases.